

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Geoffrey H. Moore

Application No. Unassigned

Filed: November 6, 2001

For: Apparatus for Making Pipe Insulation

Art Unit: Unassigned

Examiner: Unassigned

PENDING CLAIMS AFTER ENTRY OF PRELIMINARY AMENDMENT

11. An apparatus for receiving a selected curable material and for retaining the selected curable material during a forming stage and a curing stage, the selected curable material being formed into a desired configuration during the forming stage and being heated during the curing stage to harden the selected material in the desired configuration, the apparatus comprising:

a core mounted for rotation about an axis of rotation, the core having  
an associated core rotation means for rotating the core about an axis of rotation,  
an outer permeable surface for receiving and retaining the selected curable material, and  
fluid communication means for receiving air flow from the outer permeable surface;

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a curing means for heating the selected curable material to at least a curing temperature to harden the selected curable material in the selected configuration; and,

a vacuum means in fluid communication with the fluid communication means of the core for

drawing a forming core air flow through the fluid communication means, the outer permeable surface of the core and the selected curable material retained on the core during forming of the selected curable material retained on the core, the forming core air flow having a temperature below the curing temperature, and

drawing a curing core air flow through the outer permeable surface and the fluid communication means of the core and the selected curable material retained on the core during curing of the selected curable material retained on the core.

12. The apparatus as defined in claim 11 wherein the curing means includes a curing station for supplying a curing air supply around the core, and air heating means for heating the curing air supply to at least the curing temperature; and, the vacuum means includes

- a forming air outlet for receiving the forming core air flow from the fluid communication means,
- a recirculation outlet for receiving the curing core air flow from the fluid communication means and for recirculating the curing core air flow back to the curing station, and
- a valve means for controlling fluid communication between the forming air outlet and the fluid communication means and for controlling fluid communication between the recirculation outlet and the fluid communication means.

13. The apparatus as defined in claim 12 wherein the vacuum means includes an exhaust fan for discharging the forming core air flow via the forming air outlet; and,

- a recirculation fan for recirculating the curing core air flow to the curing station via the recirculation outlet.

14. The apparatus as defined in claim 12 wherein the valve means has

- an associated forming setting, the valve means in the associated forming setting being operable to connect the forming air outlet to the fluid communication means, and to disconnect the recirculation air outlet from the fluid communication means;
- an associated curing setting, the valve means in the associated curing setting being operable to connect the recirculation air outlet to the fluid communication means, and to disconnect the forming air outlet from the fluid communication means; and,
- an associated distributed setting between the associated forming setting and the associated curing setting for providing continuous air flow through the core when the apparatus is changing from the forming stage to the curing stage, the valve means being operable to decrease fluid communication between the forming air outlet and the fluid communication means and to conjointly and proportionately increase fluid communication between the recirculation air outlet and the fluid communication means when the valve means is moving through the associated distributed setting from the associated forming setting to the associated curing setting.

15. The apparatus as defined in claim 14 further comprising  
a forming station for forming the selected curable material retained on the core into  
the selected configuration; and,

a core support for supporting the core, the core support being pivotable about a pivot  
axis to pivot the core between the forming station and the curing station, the core support  
having a vacuum conduit for providing fluid communication from the fluid communication  
means of the core to the forming air outlet and the recirculation outlet, the valve means being  
operable to control fluid communication between the forming air outlet and the vacuum  
conduit and to control fluid communication between the recirculation outlet and the vacuum  
conduit.

16. The apparatus as defined in claim 15 wherein the curing station comprises a  
curing oven for receiving the core and for supplying the curing core air flow to the core, the  
core support being operable to pivot the core into and out of the curing oven.

17. The apparatus as defined in claim 16 wherein  
the curing oven has a rear opening, a main opening and a main door for closing and  
opening the main opening, the main opening extending lengthwise along the curing oven and  
the core support being operable to pivot the core into and out of the curing oven core when  
the main door is open;

the core support is positioned beside the rear opening of the curing oven and has a  
sealing plate dimensioned to close and seal the rear opening of the curing oven when the core  
is pivoted into the curing oven when the main door of the oven is open, the main door being  
closeable when the core is in the oven to seal the core and the selected material retained  
thereon in the oven for curing.

18. The apparatus as defined in claim 17 wherein  
the curing oven comprises a curing air inlet for discharging the curing air supply into  
the curing oven, the curing air inlet being in fluid communication with the recirculation  
outlet; and

the air heating means is between the recirculation outlet and the curing air  
inlet to heat the curing air supply to at least the curing temperature.

19. The apparatus as defined in claim 18 wherein  
the curing oven includes a rear door for closing the rear opening, and

the curing air inlet includes an associated bypass valve for disconnecting the curing air inlet from the curing oven and rerouting the curing air supply back to the air heating means.

20. The apparatus as defined in claim 18 wherein  
the curing oven includes an oven air outlet for drawing an oven air outflow from the curing oven and for inducing a rotational air flow of the curing air supply around the core in the curing oven, the oven air outlet being in fluid communication with the air heating means and the curing air inlet to recirculate the oven air outflow back to the curing air inlet after the oven air outflow has been reheated; and,

the oven air outlet and the curing air inlet are located on a common side of the curing oven and are disposed on opposite sides of the core.

21. The apparatus as defined in claim 20 wherein the  
curing air inlet extends lengthwise along the common side and releases the curing air supply along substantially an entire length of the selected curable material retained on the core.

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